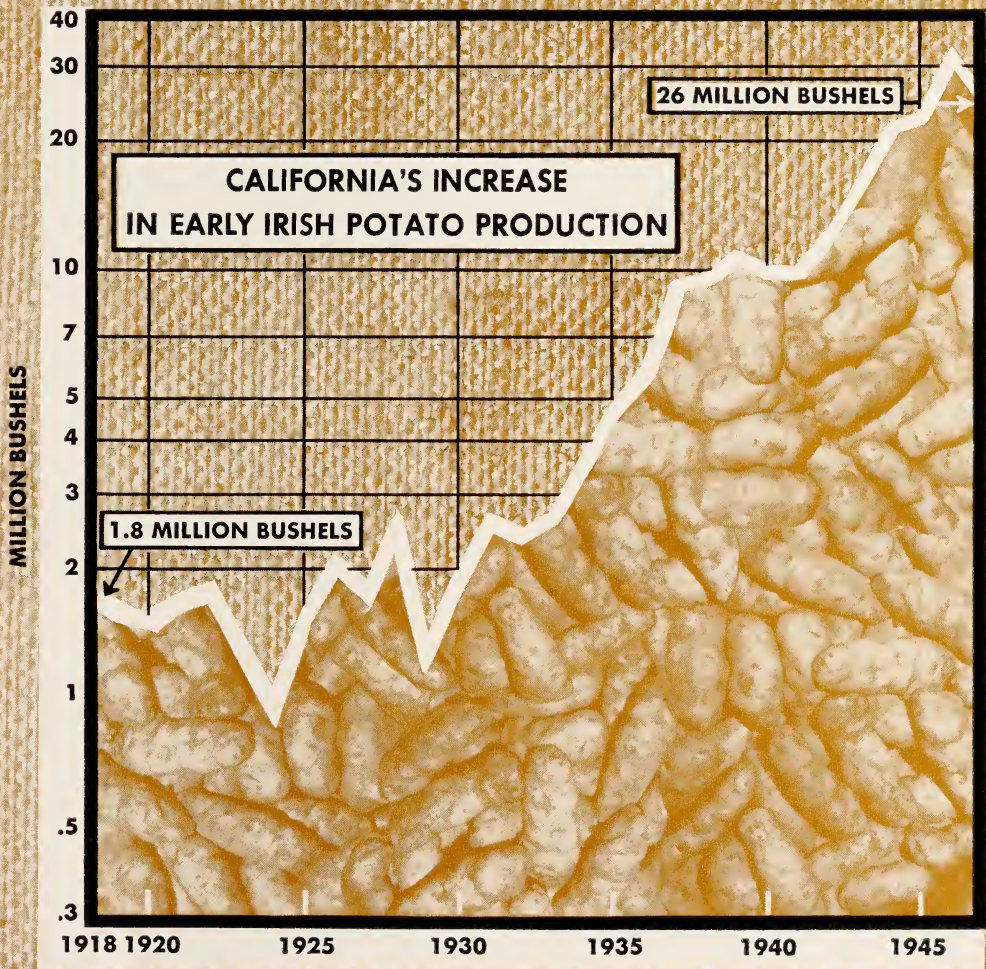


CALIFORNIA EARLY POTATOES SITUATION AND OUTLOOK, 1948

IVAN M. LEE



California's Early Potato Industry

has expanded rapidly over the past ten years. The bulk of this state's crop is marketed in the late spring months of May and June in direct competition with potatoes from ten southern states. California, however, is far out in front of other late spring states in acreage, enjoys a yield more than twice that of other late spring states, and in each year since 1944 has produced more than all other late spring states combined.

Unloads of California early potatoes have shown a substantial increase in major eastern markets, relative to unloads of potatoes from other states.

Farm Prices for California early potatoes have followed the same general movement as farm prices in other late spring states over the past twenty years. The level of farm prices in this state has been favorable relative to those in other states in recent years. This favorable price may be explained in part by the large proportion of high grade potatoes marketed. Within the same grade no clear evidence exists of a price premium for California potatoes in two important eastern markets.

Major fluctuations in production have been accompanied by fluctuations in farm price in the opposite direction.

Government price support operations, particularly in 1946 and 1948, held the farm price above what it would have been had all potatoes moved through regular market channels.

The Outlook for early potato production and price is tied closely to the new farm price support legislation. If production continues at the 1948 level, California farm price will probably fall in comparison with the price of other products which can be produced on the same land.

CALIFORNIA EARLY POTATOES

SITUATION AND OUTLOOK, 1948

Ivan M. Lee

THE TERM "early Irish potatoes" has come to be applied to that portion of the Irish potato crop which is produced on a commercial scale for marketing before September 1 in any given year. The early potato can be stored only for a very short period of time, as contrasted with the late crop potato, which is marketed after September 1 in the year produced, or in the early months of the following year.

The early potato is generally dug before it is fully mature. The thin skin of the immature potato makes it very susceptible to skinning, bruising, and decay. To avoid heavy losses through spoilage it is necessary to place the early potato in the retail market within two to three weeks of the time of digging. The more mature late potato, on the other hand, develops a thick, corky skin which affords greater protection against skinning and bruising and thus markedly improves its storage ability.

Varietal Difference

To a certain extent the distinction between early and late potatoes is also a varietal distinction, since the common early potato varieties have proved themselves adaptable to early tuber development and growth under the climatic conditions prevailing in their respective areas of production. The predominant variety grown in California is White Rose, marketed as "California long whites."

This circular is restricted to a rather brief treatment of the California early potato industry. This limits our scope primarily to conditions within California, and to certain comparisons between Cali-

fornia and other areas in the United States which compete most directly with this state in early potato production. An attempt is made to set out the most directly competing early potato producing areas in the next few paragraphs. In the overall picture, however, it is well to bear in mind that the *United States early potato industry accounts for a relatively small proportion of the total United States potato acreage and production.*

Early vs. Late Potatoes

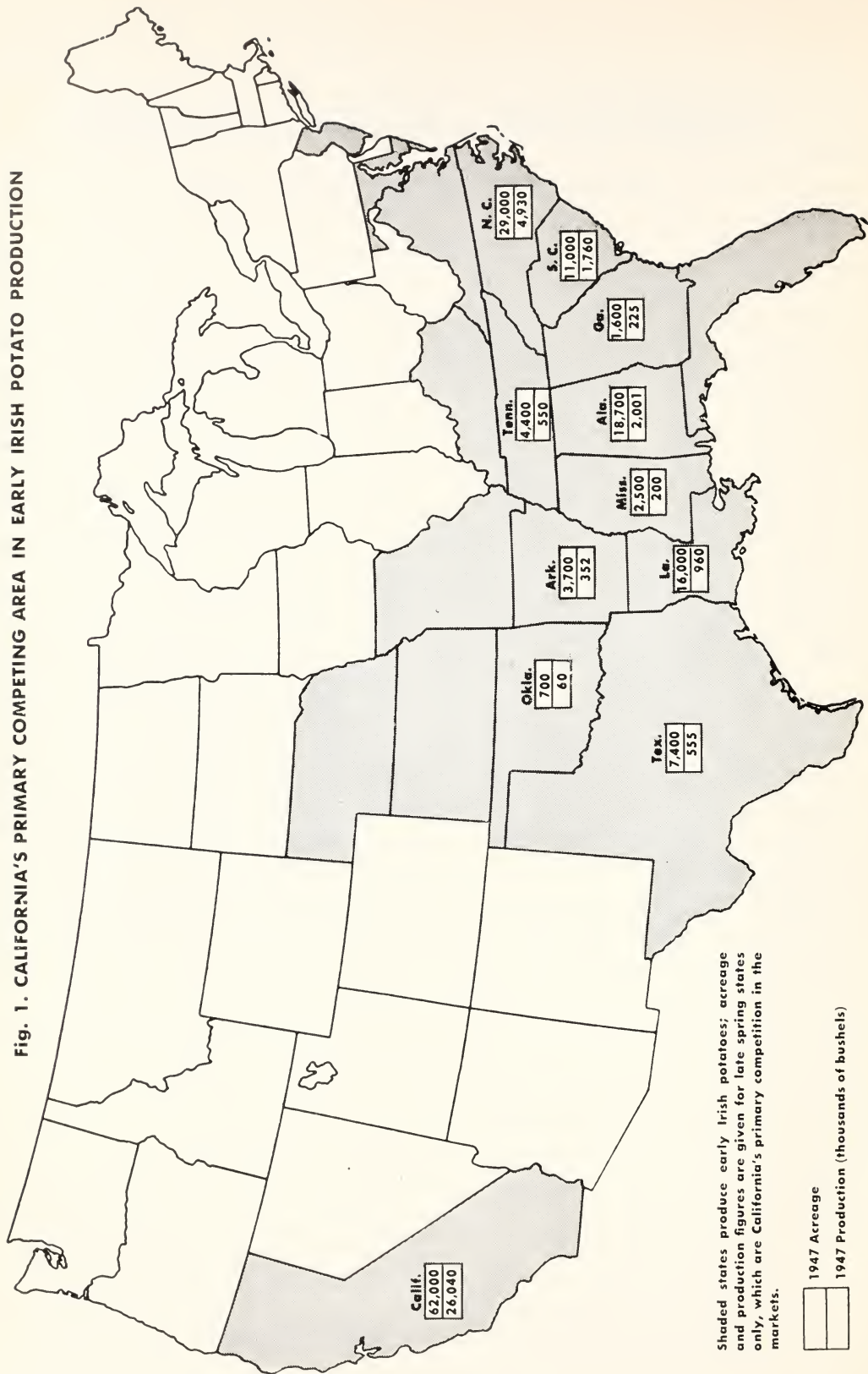
Of the total United States potato acreage in 1947 of over 2 million acres, only 307,000 acres (15 per cent) were early potatoes. Of the total production of 384 million bushels, 66 million bushels (17 per cent) were early potatoes.

Within California the order of importance of early and late potato acreage and production is reversed from that in the nation as a whole. Still, late potatoes account for a significant proportion of the total potato production even in this state. During the three years 1945 through 1947 an annual average of around 40 million bushels of potatoes was produced in this state. During this period late potatoes accounted for almost one third of this total. Early potatoes accounted for the remaining two thirds.

Seasonal Categories

The total United States acreage and production of early potatoes may be broken down into four seasonal categories defined by months of peak marketings and designated as *winter*, *early spring*, *late spring*, and *summer*. Although considerable overlap in marketing exists be-

Fig. 1. CALIFORNIA'S PRIMARY COMPETING AREA IN EARLY IRISH POTATO PRODUCTION



Shaded states produce early Irish potatoes; acreage and production figures are given for late spring states only, which are California's primary competition in the markets.

 1947 Acreage

 1947 Production (thousands of bushels)

**Table 1. UNITED STATES EARLY POTATO ACREAGE AND PRODUCTION
BY SEASONAL CATEGORIES, 1947**

Marketing season	Months of peak marketings	Acreage		Production	
		Acres	Per cent of total	1,000 bushels	Per cent of total
Winter	January-February ..	11,400	4	1,306	2
Early spring	March-April	22,400	7	2,934	4
Late spring	May-June	157,200	51	37,633	57
Summer	July-August	115,700	38	24,286	37
Total	306,700	100	66,159	100

tween the various categories, this seasonal designation does provide an approximate basis for defining the directly competing areas within the overall early potato producing area.

A cross section picture of the early potato acreage and production in the United States is presented in table 1 and figure 1. The shaded area in figure 1 includes all states which contributed to the total early potato production in 1947, the most recent year for which data are available. Virtually all of the *winter* and *early spring* potatoes are produced in Florida and Texas. It is evident from table 1, however, that these two seasonal categories, taken together accounted for only a small proportion of the total early potato acreage (11 per cent) and production (6 per cent). The bulk of the *summer* potatoes is produced in the northernmost states falling within the shaded area in figure 1. Of this group of states New Jersey and Virginia are by far the most important—these two states combined accounting for 76 per cent of the acreage and 77 per cent of the production of summer potatoes.

California early potatoes are included in the remaining seasonal category designated as *late spring*. Ten southern states also fall in this category. It is the early potatoes in these ten southern states which compete most directly with California

early potatoes during the season when the bulk of this state's early potatoes are marketed.

California Production

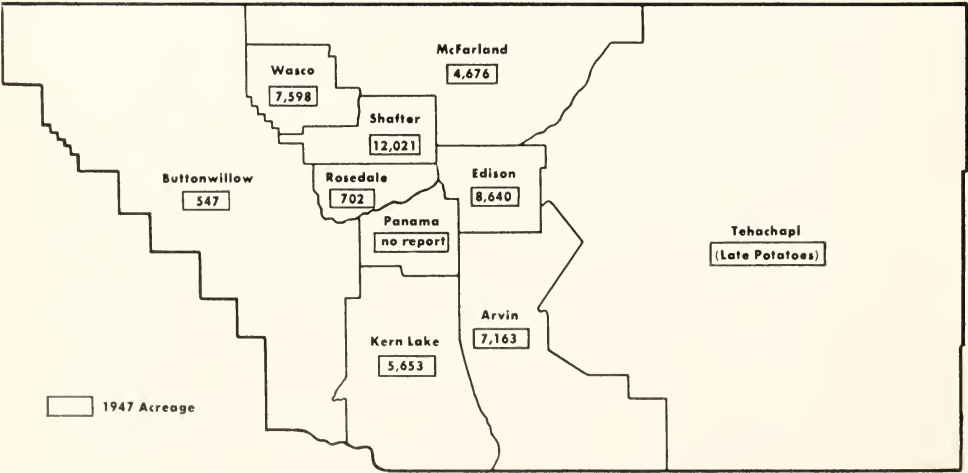
In 1947 the acreage of early potatoes in California was far above the acreage in any other late spring state. California's 62,000 acres constituted 40 per cent of the acreage in all late spring states combined. The production comparisons are even more striking. With 26 million bushels in 1947, California accounted for 69 per cent of the total early potato production in late spring states. Ranking next to California among the late spring states in early potato production in 1947 was North Carolina. However, North Carolina's acreage was less than one half and her production less than one fifth that of California's.

Considering all early potato states, California still retains her position as leading producer. In 1947 this state accounted for 20 per cent of the total early potato acreage and over 43 per cent of the total early potato production. New Jersey, a heavy supplier of summer potatoes, ranked second. New Jersey's acreage of 54,000 in 1947 was only 8,000 acres under that in California. Her production of a little over 12 million bushels, however, was under one half that in California.

Fig. 1A. CALIFORNIA'S EARLY POTATO ACREAGE, BY COUNTIES, 1947



Fig. 1B. KERN COUNTY'S EARLY POTATO ACREAGE, BY DISTRICTS, 1947



In the above comparisons the greater relative importance of California in production than in acreage is accounted for by the very high yields of early potatoes in this state as compared with other states. California's yield in 1947 averaged 420 bushels per acre as compared with 239 bushels per acre in the late spring producing states, and 149 bushels per acre in all early potato-producing states.

Kern County Leads

Kern County contains more than 75 per cent of California's early potato acreage. Of the state total of 62,000 acres in 1947, 47,000 acres were located in Kern County. Tulare, the next ranking county, had only 6,600 acres. The remainder of the acreage was scattered over ten other counties with acreage ranging from 100 to 1,500 acres. This acreage distribution is shown in figure 1A.

Production data for Kern County are not available for 1947. However, yield data for the period 1937 through 1944 indicate that Kern County yields during this period averaged slightly above yields for the state as a whole. It is probably true that Kern County yields were at least as high as California average yields in 1947. If this is true, Kern County accounted for at least 75 per cent of the state's total early potato production in 1947.

Within Kern County the three most important districts are Shafter, Wasco, and Edison. The areal breakdown of potato acreage in Kern County is shown in figure 1B. This areal breakdown is that used by the Kern County Agricultural Conservation Association office. The acreages indicated are based on ACA data. (A proportional upward adjustment in the ACA acreage in each district was made to bring the county total in line with the total as estimated by the county Agricultural Commissioner.) Production data by districts are not available for 1947.

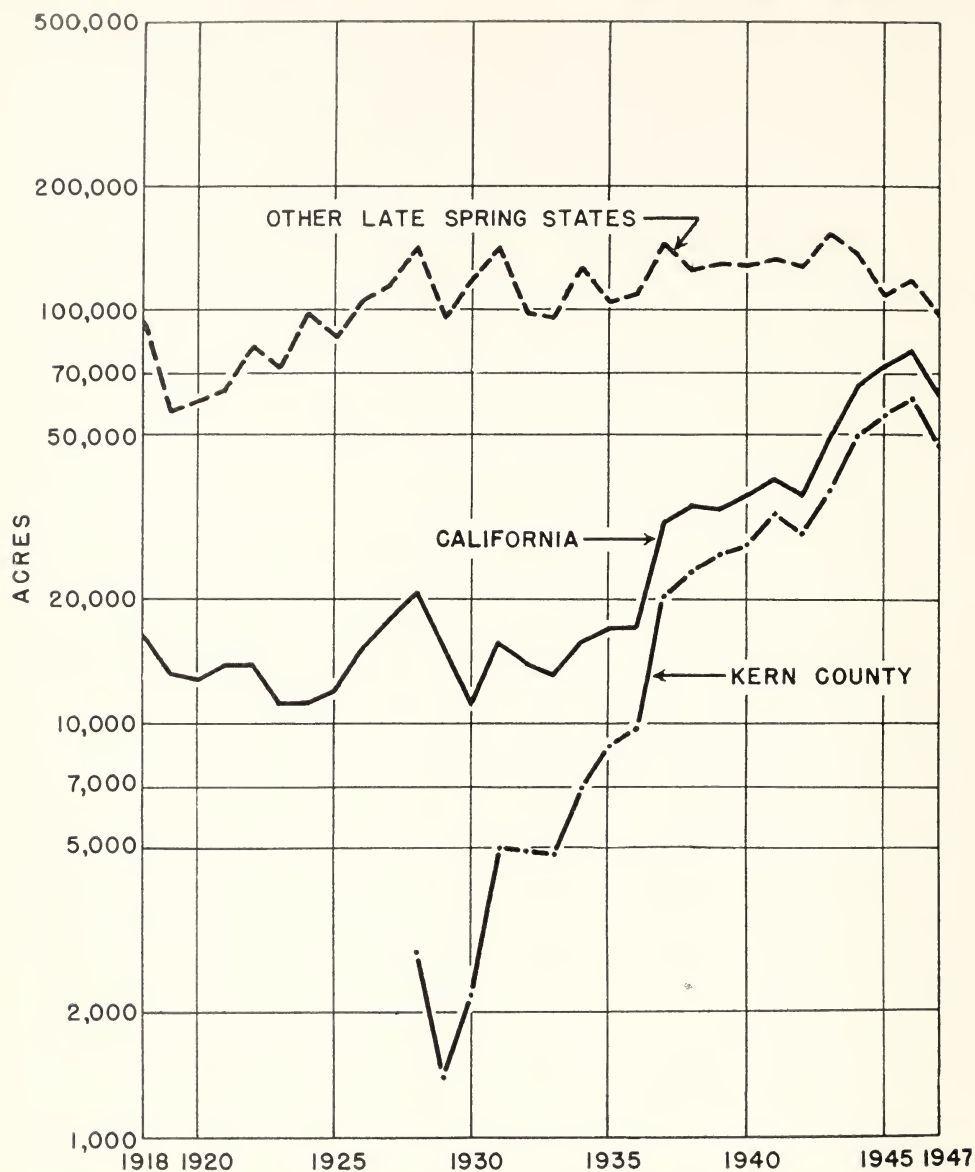
Acreage Increase

California early potato acreage has shown a tremendous increase in the past ten years (figure 2). Between 1918 and 1936 the California acreage fluctuated about an average level of around 14,000 acres. The year 1937 marks the beginning of a very sharp upward trend in California acreage. By 1946, the peak year, acreage in this state had increased to 81,000 acres, over 475 per cent of the 1936 level. In 1947, acreage dropped 19,000 acres from the 1946 peak. Taking the entire period of 1937 through 1947 the average rate of increase in this state's early potato acreage was around 10 per cent per year. Final estimates of early potato acreage in 1948 are not available at the time this is being written. Preliminary estimates, however, place the 1948 acreage nearer the 1946 peak than the 1947 level.

The dominant position of Kern County in the California early potato industry during the last 11 years means that the state acreage trend over this period is largely a reflection of the Kern County acreage trend. Over the entire period 1937 through 1947 an average of 76 per cent of the California early potato acreage in each year was located in Kern County. Data on Kern County early potato acreage are available only since 1928. During the period 1928 through 1937 the marked upward trend in Kern County acreage is in sharp contrast to the relatively stable state acreage. Whereas Kern County accounted for under 14 per cent of the total state acreage in 1928-29, by 1937 this county accounted for 65 per cent of the state acreage. Since 1937 the Kern County acreage trend has been similar to that for the state as a whole.

By comparison with the California trend, early potato acreage in other late spring states has remained relatively constant. This is particularly true since 1930. The average annual acreage in other late spring states during the period 1930-1936 was 113,000 acres as compared to 123,000 acres during 1943-1947. This

Fig. 2. RAPID RISE IN EARLY POTATO ACREAGE IN CALIFORNIA, AND PARTICULARLY KERN COUNTY, AS COMPARED WITH OTHER STATES



represents an increase of only 11 per cent (table 2). A comparison of the same two periods for California shows a 44 per cent increase. During the period 1930-1936 California acreage stood at 13 per cent of the acreage in all other late spring states combined as compared with just under 54 per cent during 1943-1947. In 1947 California's acreage was 65 per cent

of the acreage in all other late spring states.

Increase in Yields

Yields, too, have increased markedly during this period in California in contrast with yields in other late spring states (fig. 3 and table 2). The sharp increase in California yields during the

Fig. 3. CALIFORNIA'S EARLY POTATO YIELD PER ACRE, COMPARED WITH YIELD IN COMPETING STATES

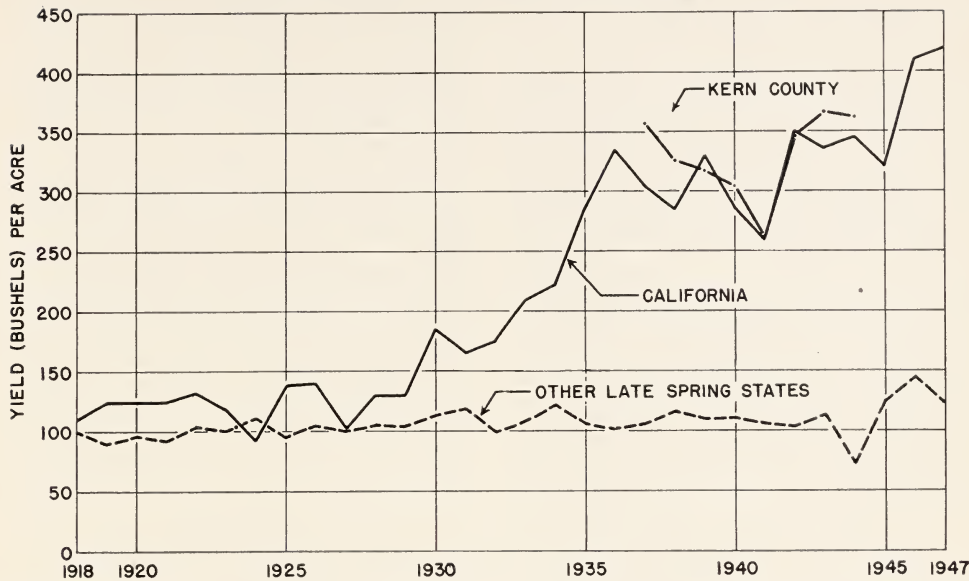


Table 2. AVERAGE ANNUAL ACREAGE AND PRODUCTION OF EARLY IRISH POTATOES, CALIFORNIA AND OTHER LATE SPRING STATES

Period	California			Other late spring states		
	Acreage	Yield	Production	Acreage	Yield	Production
		bushels per acre	thousand bushels		bushels per acre	thousand bushels
1918-1929.....	13,921	122	1,696	88,016	101	8,912
1930-1936.....	14,857	230	3,422	113,000	111	12,568
1937-1942.....	34,667	301	10,436	130,667	109	14,211
1943-1947.....	65,800	368	24,221	122,720	113	13,892

middle 1930's can be attributed largely to increased application of nitrogen fertilizer and improved irrigation practices. The reduction in production costs per bushel, which resulted from the increased yields, coupled with unusually high potato prices in 1936 are the important factors leading to the sharp increase in acreage in 1937. Continued high yields since that time have held potato production costs down compared to alternative crops, and thus have probably maintained a relatively profitable potato enterprise for the California grower.

Yields of early potatoes in Kern County are not available for this entire period. Information available for the period 1937 through 1944, however, indicates a trend similar to that for the state as a whole but at a little higher level. As a result of the marked increase in both acreage and yield, California's increase in production relative to other late spring states has been even more remarkable (fig. 4 and table 2). During the period 1918 through 1930 only a slight upward trend is evident in California production. During this period the rate of in-

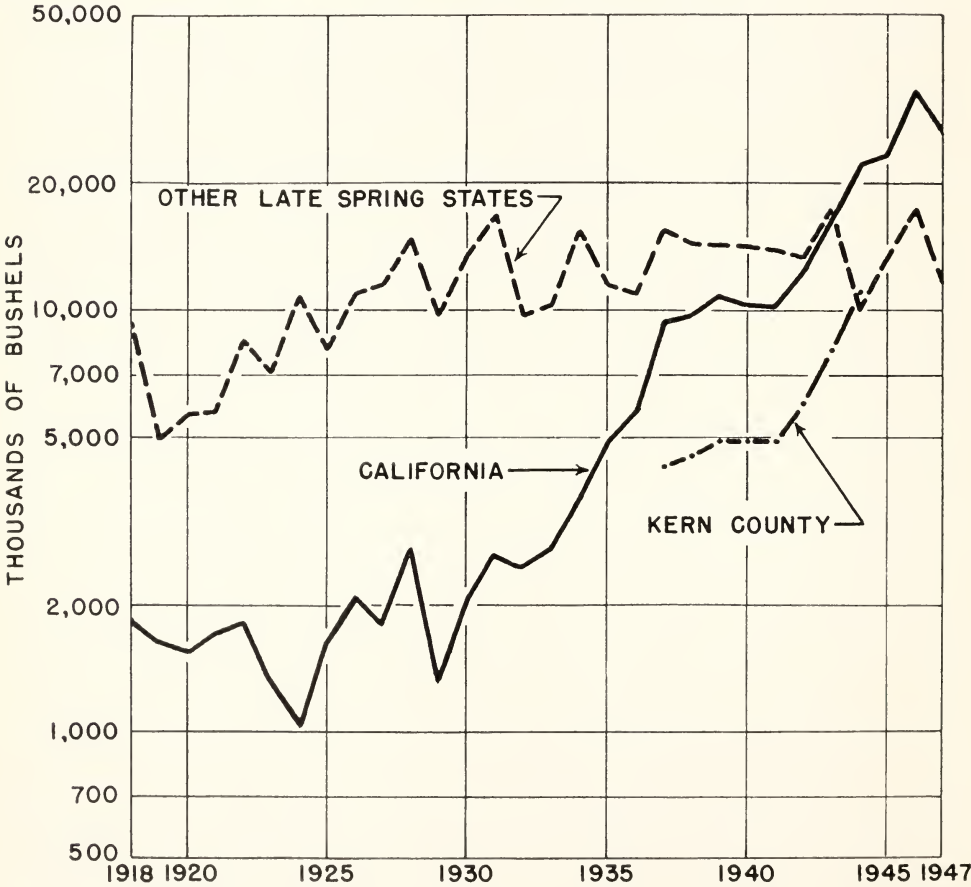
crease in acreage in other states was higher. The marked increase in California yields during the 1930's, however, led to a very sharp upward trend in California production relative to production in other late spring states. During 1937-1942 this state's production leveled off, the upward trend being resumed again in 1943 with the sharp upturn in acreage.

By comparison, the stability of early potato production in other late spring states, particularly since 1930, stands out (fig. 4). In 1928-1929 California production was about 16 per cent of the production in all other late spring states combined. This state's production exceeded that in all other late spring states combined for the first time in 1944.

In 1947 California produced over twice as many early potatoes as all other late spring states combined. Considering the last five-year period, 1943-1947, California production has averaged 174 per cent of the production in other late spring states (table 2).

Kern County production data are available only for the period 1937 through 1944. The trend during this period was quite similar to that for the state as a whole. In 1944 Kern County production exceeded that in all other late spring states combined. The Kern County acreage trend indicates that this county's production has been well in excess of the total in all other late spring states since that time.

Fig. 4. RISE IN CALIFORNIA'S EARLY POTATO PRODUCTION, AS COMPARED WITH THAT OF OTHER STATES



MARKETS SERVED

California ships 28 per cent of total U. S. Early potatoes. Market has extended rapidly eastward since 1940

The bulk of California's early potatoes move to market from the middle of May to the last of June. During this period virtually all of the shipments originate in Kern and Tulare counties. In 1947 the peak movement came during the period May 24 through June 13 when over four thousand cars were shipped from this area in each of three successive weeks.

Although peak movements generally occur in the six-week period indicated, the marketing season for California early potatoes generally extends from the middle of April to the first of August. During this period potatoes from this state meet competition in the market from two important categories of potatoes: early potatoes from other states, primarily other late spring states, and preceding year's late potatoes, primarily from Maine and Idaho.

California's shipments of early potatoes have increased markedly in relation to shipments of competing potatoes since 1924 (table 3). The figures presented are

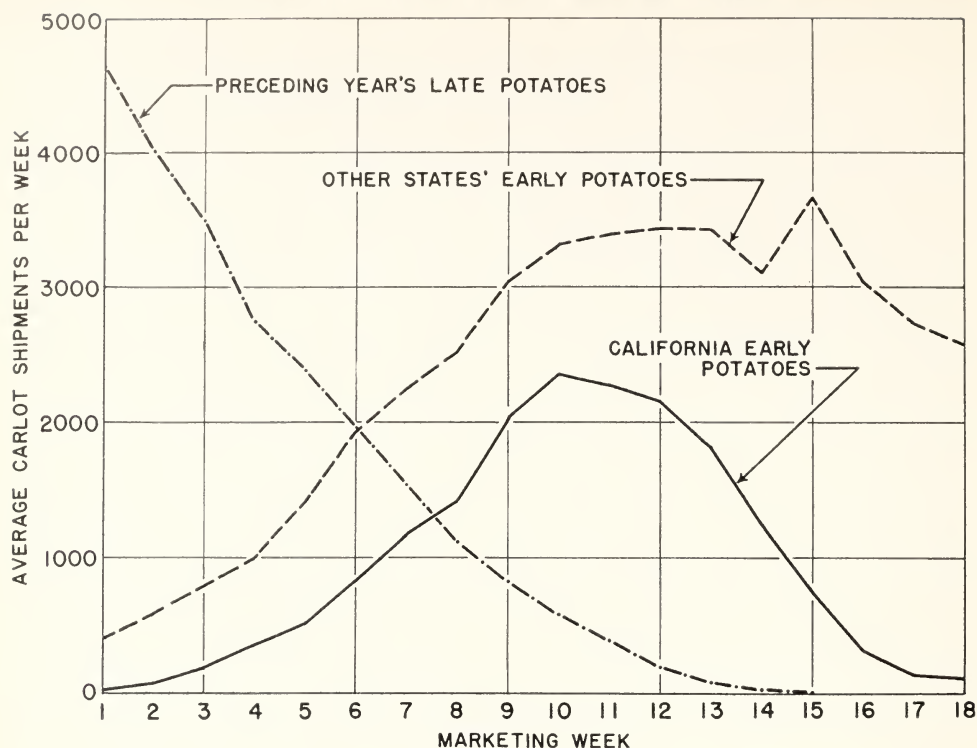
based on shipments during an eighteen-week marketing season. For each year the week containing April 1 has been designated as marketing week one. The eighteen marketing weeks, therefore, extend generally through the first week in August.

The percentage of the season's total shipments originating in California has increased very significantly over the period presented—from 2 per cent in the period 1924–1930 to 28 per cent in the period 1942–1946. Total carlot shipments averaged only about two thousand cars more per season during 1942–1946 than during 1924–1930. The increase of California early potato shipments, therefore, is associated with a large decrease in the shipments of competing potatoes. As can be seen from table 3, between 1924–1930 and 1942–1946 the per season average carlot shipments of early potatoes from other states fell off by about 12,000 cars, and shipments of preceding year's late potatoes decreased by around 9,000 cars.

Table 3. CARLOT SHIPMENTS OF CALIFORNIA EARLY POTATOES AND COMPETING POTATOES

	Average per Marketing Season for the Period:							
	1924–1930		1931–1936		1937–1941		1942–1946	
	Thousand carlots	Per cent	Thousand carlots	Per cent	Thousand carlots	Per cent	Thousand carlots	Per cent
California early potatoes.....	1.7	2	4.0	5	13.1	16	24.5	28
Other states' early potatoes.....	53.0	62	45.1	56	43.5	53	41.2	47
Preceding year's late potatoes.....	30.7	36	31.4	39	25.5	31	21.9	25
Total.....	85.4	100	80.5	100	82.1	100	87.6	100

Fig. 5. CALIFORNIA'S POSITION IN THE MARKET



Comparing the same two periods, per season shipments of California early potatoes increased by almost 23,000 cars.

Weekly Shipments

Weekly shipments during the eighteen-week marketing season followed approximately the same pattern in each year during the period 1937 through 1946. California shipments have increased continuously from week one through week ten—corresponding approximately to the first week in April through the first week in June; they have then held at a relatively high level for about three weeks, and then decreased sharply beginning with week thirteen—corresponding approximately to the fourth week in July (fig. 5). Considering this entire ten-year period, California shipments during the four peak weeks—week nine through week twelve—averaged over 2,200 cars per week. This is considerably less than the average weekly shipments of just under

4,000 cars during these same four weeks in 1947.

The pattern of early potato shipments from other states during the first half of the marketing season has been very similar to that of California shipments, although average weekly shipments of early potatoes from other states has been considerably higher throughout. A sharp contrast in the seasonal pattern of shipments shows up in the latter half of the marketing season. Whereas California shipments dropped continuously beginning with week ten, early potato shipments from other states held at more nearly their seasonal high throughout the latter half of the season.

In contrast to early potato shipments, weekly shipments of the preceding year's late potatoes fell continuously throughout the season. Beginning at nearly 4,400 cars in week one, weekly shipments of late potatoes fell to virtually zero by week fifteen.

Seasonal Shift

Over the past 20 years there has been a shift in the distribution of the season's shipments. Table 4 shows the percentage breakdown of the season's shipments by intervals for the two periods 1924 through 1936, and 1937 through 1946. A comparison of these two periods reveals a forward shift in time of shipment in each of the three categories. The forward shift in time of shipment of the preceding year's late potatoes has increased the concentration of shipments in the first season interval. California early potato

which unload data are available for these years. In 1946-47 these cities accounted for only about 40 per cent of the total unloads of California potatoes during these three months. The cities are arranged by geographical location so that the top row of charts represents the easternmost cities.

As early as 1935-36, when production in California was relatively small, this state contributed a high proportion of the potato unloads in the two midwestern cities Minneapolis and St. Paul. By 1940-41 California unloads had shown a significant increase in a number of

Table 4. PERCENTAGE DISTRIBUTION OF THE SEASON'S TOTAL SHIPMENTS, CALIFORNIA EARLY POTATOES AND COMPETING CATEGORIES

Interval	Based on the period 1924 through 1936			Based on the period 1937 through 1946		
	Early potatoes		Preceding years late potatoes	Early potatoes		Preceding years late potatoes
	California	Other states		California	Other states	
Weeks 1 through 7	6	14	78	17	20	86
Weeks 8 through 14	65	55	22	73	52	14
Weeks 15 through 18	29	31	0 ^a	10	28	0 ^a
Total	100	100	100	100	100	100

^a Less than one half of 1 per cent.

shipments have become more concentrated in the second seasonal interval. In early potatoes from other states, the forward shift has made for a more even distribution of shipments throughout the eighteen-week period.

Market Expansion

Along with the rapid growth in the early potato industry in California has come a substantial extension of the California early potato market into eastern areas. Figure 6 presents, by selected pairs of years, the proportion of California potatoes in the total potato unloads in nineteen different cities during the months May, June, and July. These nineteen cities represent all of the cities for

cities still farther eastward. It has been since 1941, however, that the importance of California potatoes has shown the most marked increase. In 1946-47, during May, June, and July, 62 per cent of the total potato unloads in Detroit, 49 per cent in Cleveland, 47 per cent in Chicago, 36 per cent in Pittsburgh, and 25 per cent in New York came from California. These five cities are among the largest potato markets in the eastern states.

1947 Unloads

A more complete summary of the geographic distribution of rail unloads of California potatoes during May, June, and July of 1947 is given in table 5. This table is based on rail unload data

for 100 United States cities in 39 states, available for the first time in 1947. It is therefore not possible to present comparable figures for earlier years. These unload data account for just under 70 per cent of the total California rail unloads during these months in 1947. It should be mentioned that the percentages presented distort upward the apparent relative importance of California potatoes in most of the geographic divisions, since truck unloads are not included in the total. Truck movements are probably quite heavy within the southern divisions and to nearby points in bordering divisions during this season.

Important Outlets

From the percentage distribution of California unloads it is seen that the East North Central, Middle Atlantic, and West North Central geographic divisions provide an important outlet for California potatoes during these three months. Seventy per cent of the total California un-

loads in the 100 United States cities were in cities in these three geographic divisions. About 50 per cent of the United States population as of July 1, 1947 was located within these three divisions, and a number of cities falling within these divisions are among the largest potato markets in this country. In all three divisions California shows up as a relatively heavy contributor to total potato unloads during this three-month period in 1947.

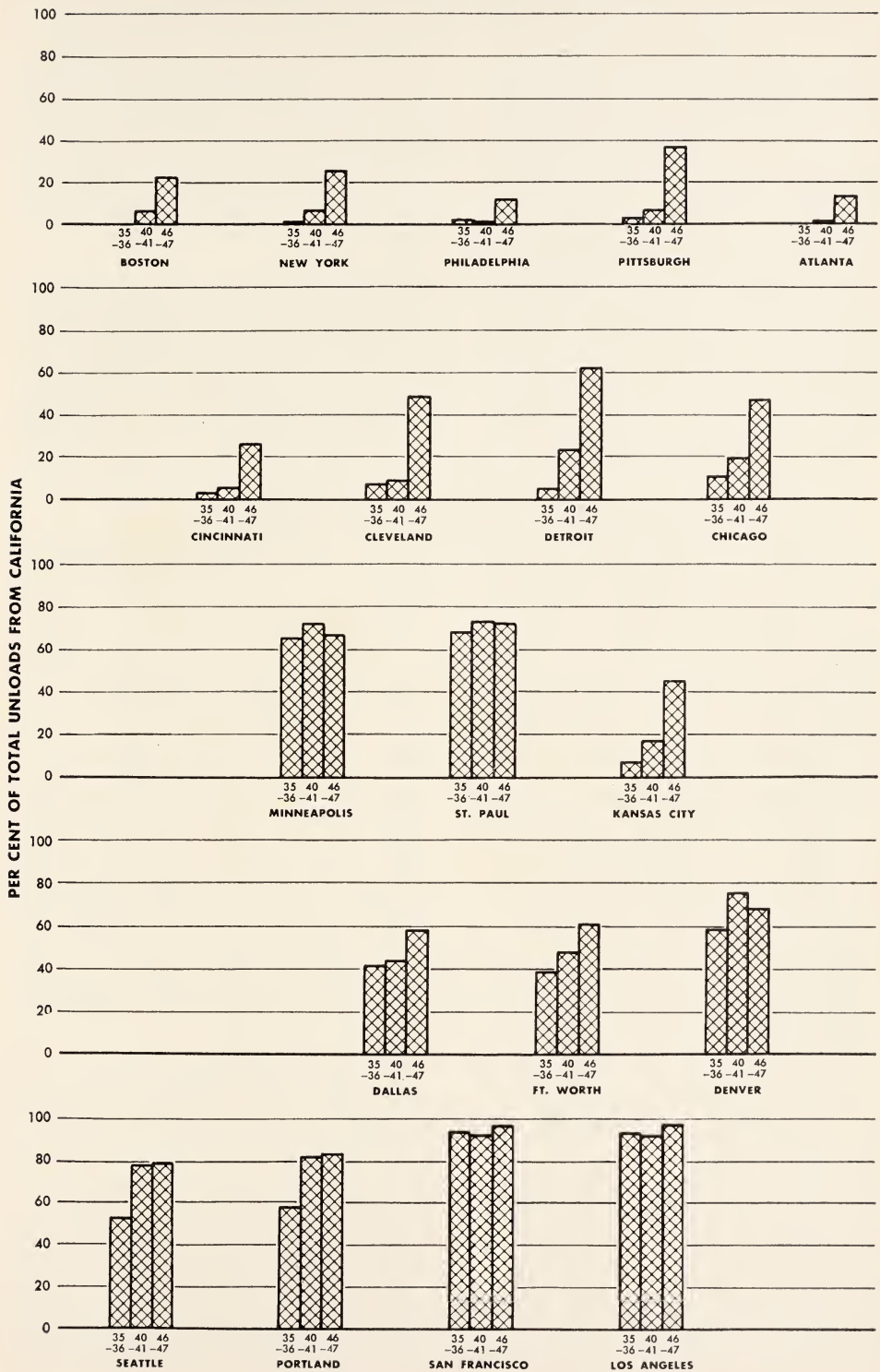
In the West South Central, Mountain, and Pacific divisions California supplied even a larger proportion of the total unloads. Only 20 per cent of the total California unloads accounted for, however, were in cities contained within these three divisions. About 22 per cent of the July 1, 1947 United States population was located within these divisions, and only a few of the cities contained within their boundaries constitute important potato markets. However, Los Angeles, falling within the Pacific division, does constitute the most important single outlet for California early potatoes.

**Table 5. RAIL UNLOADS OF POTATOES FROM CALIFORNIA DURING
MAY, JUNE, AND JULY, 1947**

Census geographic division	California unloads as per cent of total	Percentage dis- tribution of California unloads
New England	28	4
Maine, Massachusetts, Rhode Island, Connecticut		
Middle Atlantic	37	18
New York, New Jersey, Pennsylvania		
East North Central	52	36
Ohio, Indiana, Illinois, Michigan, Wisconsin		
West North Central	59	16
Minnesota, Iowa, Missouri, South Dakota, Nebraska, Kansas		
South Atlantic	24	4
Maryland, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, Washington, D.C.		
East South Central	31	2
Kentucky, Tennessee, Alabama		
West South Central	63	8
Arkansas, Louisiana, Oklahoma, Texas		
Mountain	70	3
Montana, Colorado, Arizona, Utah		
Pacific	80	9
Washington, Oregon, California		

Note: Includes boat unloads converted to carlot equivalents; does not include truck unloads.

Fig. 6. CALIFORNIA'S INCREASING IMPORTANCE IN TOTAL POTATO UNLOADS IN KEY CITIES



CALIFORNIA FARM PRICES

Farm prices have fluctuated widely in the past, but recently have been favorable. Grades are generally high

The general movement of farm prices for California early potatoes has been similar to that of competing potatoes over the last 30 years. The relationship between these prices, however, becomes noticeably closer beginning in the latter 1930's as California became a more important supplier of early potatoes in more distant markets. A picture of the year-to-year movement of the seasonal average farm price of California early potatoes and early potatoes from other late spring states is presented in figure 7.

In the early part of the period shown the bulk of the California early potato crop was marketed within the state or in immediately surrounding states. The bulk of the early potatoes from other states, on the other hand, was marketed in the middle west and east. It is not surprising under such conditions to find differences in the movement of farm prices in these two producing areas, as well as marked differences in price levels. With the extension of the California potato market outlets further eastward, the bulk of the state's early potato crop has come to be sold in direct competition with potatoes from other areas. Under such conditions farm price movements in the two areas would be expected to follow more closely the same pattern.

In recent years, California potatoes have enjoyed a rather favorable farm price level, compared to the farm price level in other late spring states (fig. 7). Since prices of both California early potatoes and those of other late spring states are largely determined in the same eastern markets, we might expect a consistently lower farm price level for California potatoes due to the higher hauling costs from farm to market. But this has not been the case. In six of the last ten years California farm price has exceeded farm price in other late spring states. (In the

other four years the farm price relationship was reversed.) The weighted average farm price of California early potatoes for the last ten years, 1938-1947, was \$1.23 per bushel as compared with \$1.08 per bushel in all other late spring states.

Grades High

The favorable farm price for California early potatoes may be explained in part by the higher proportion of this state's potatoes which meet the specifications for the higher potato market grades. As has been indicated, Kern and Tulare counties account for virtually all of the early potato production in this state. In 1947, about 84 per cent of shipments from these two counties graded U. S. No. 1 Extra or U. S. No. 1, size A. In five of the last seven years, 60 per cent or more of the shipments from these two counties have met the specifications for these two highest grades. Data on the grade classification of shipments from competing early potato producing areas are not available for comparison. However, these figures indicate a high proportion of California early potatoes falling within the higher grades. If a significantly lower proportion of the early potatoes produced in other late spring states meet the specifications for the higher grades, it would tend to depress the farm price of potatoes in those states relative to the California farm price.

The claim is sometimes made that California long white potatoes command a premium in price over other varieties of early potatoes of the same grade produced in other states. If this were true it might be another factor making for a relatively favorable California farm potato price. Some evidence does exist that higher prices have been paid in some eastern wholesale markets for California long white potatoes than for other vari-

eties from other states within the same grade classification. The evidence is hardly adequate, however, to permit the conclusion that consumers as a group actually prefer California long whites over other potatoes.

Table 6 presents for comparison the average weekly wholesale prices per hundredweight of California early potatoes and potatoes from important competing states falling within the grade classification U. S. No. 1 and/or U. S. No. 1 size A for two of California's important eastern markets—Chicago and New York. The six weeks selected are calendar weeks corresponding approximately in each year to the third week in May through the last week of June, the period of

heaviest unloads of California potatoes in each of these markets. Data on the quantities sold at the prices indicated are not available. However, only those potato states which contributed a significant proportion to the total potato unloads in these cities during May and/or June were chosen for comparison.

In the Chicago market in 1941 a price advantage for California early potatoes over competing potatoes is evident. In the other three years presented (1942, 1946, 1947) the evidence of a price advantage for this state's potatoes is not as clear-cut. In fact, in these three years the wholesale price of competing potatoes exceeded that of California potatoes in about half of the weeks included in table

Fig. 7. SEASON AVERAGE FARM PRICE OF EARLY IRISH POTATOES, CALIFORNIA AND OTHER LATE SPRING STATES



**Table 6. WHOLESALE PRICES PAID IN NEW YORK AND CHICAGO FOR CALIFORNIA
EARLY POTATOES AND POTATOES FROM IMPORTANT COMPETING STATES**
(Dollars per 100 pounds for U. S. 1 or U. S. 1-A grade)

Chicago					New York						
Week ^a	California (early)	Alabama (early)	Louisiana (early)	Idaho (late)	Week ^a	California (early)	Florida (early)	Alabama (early)	South Carolina (early)	North Carolina (early)	Maine (late)
1941					1941						
1	1.84	1.66	1.55	1.54	1	1.97	2.00	^b	^b	^b	1.48
2	2.09	1.80	1.70	1.65	2	2.48	2.23	2.44	1.98	^b	1.54
3	2.48	2.20	1.96	2.38	3	3.01	2.45	2.80	2.45	^b	2.04
4	2.48	2.34	^b	2.19	4	2.93	^b	2.75	2.34	2.14	2.12
5	2.39	2.36	^b	2.16	5	3.05	^b	2.70	2.40	2.28	2.10
6	2.14	2.38	^b	2.02	6	2.76	^b	2.52	^b	2.14	1.90
1942					1942						
1	3.24	^b	3.47	3.51	1	4.00	3.42	^b	^b	^b	2.50
2	3.07	3.13	3.21	3.45	2	3.75	3.70	3.72	^b	^b	2.66
3	2.98	3.04	2.96	3.42	3	3.60	3.64	3.55	3.32	^b	2.92
4	3.03	2.95	^b	^b	4	3.58	2.87	3.37	2.45	^b	2.86
5	3.10	2.69	^b	^b	5	3.68	^b	3.44	^b	2.93	2.67
6	3.26	3.08	^b	^b	6	3.76	^b	3.33	^b	2.35	^b
1946					1946						
1	3.97	3.97	4.19	^b	1	4.70	4.65	4.47	^b	^b	3.71
2	3.91	3.81	3.82	^b	2	4.52	4.69	4.43	^b	^b	4.12
3	3.86	4.02	3.96	^b	3	5.28	5.08	^b	^b	^b	4.42
4	3.13	2.98	3.12	^b	4	4.12	^b	3.90	^b	^b	4.07
5	2.90	2.75	2.40	^b	5	3.53	^b	3.47	^b	^b	3.81
6	3.57	^b	^b	^b	6	3.88	^b	3.14	^b	^b	3.32
1947					1947						
1	3.70	4.56	^b	4.17	1	3.76	3.72	^b	^b	^b	^b
2	4.12	4.44	^b	^b	2	4.78	4.38	^b	^b	^b	^b
3	4.09	4.03	^b	^b	3	5.00	4.37	4.67	4.29	4.29	4.29
4	3.81	3.82	^b	^b	4	4.50	3.79	4.25	4.02	^b	3.88
5	4.42	3.68	^b	^b	5	5.08	^b	^b	4.50	^b	4.05
6	4.59	^b	^b	^b	6	5.08	^b	^b	4.54	4.46	^b

^a Week 1 corresponds approximately to the third week in May.

^b No price quoted.

Predominant varieties:

California—White Rose
Alabama—Bliss Triumph

Louisiana—Bliss Triumph
Idaho (late)—Russet Burbank

Florida—Bliss Triumph
South Carolina—Irish Cobbler

North Carolina—Irish Cobbler
Maine (late)—Green Mountain and Katahdin

6. In the New York market the evidence of a price advantage for California potatoes is a little more clear-cut in each of the four years. In almost every week for which prices are presented, the price of California early potatoes was greater than that of competing potatoes in New York.

Price Relationships

The explanation of the relationship among these wholesale prices is not a simple one. Several influencing factors might be mentioned. First, the possible preference of consumers for particular potato varieties must be recognized as a possible partial explanation of wholesale potato price differentials. Second, some variability in quality and size of potatoes is still contained within the U. S. No. 1 and U. S. No. 1, size A grades. It is possible that California long whites have typically fallen in the upper portion of this size and quality range while potatoes from other states have not. If such has been the case, the higher price of California long whites may simply be a reflection in part of the preference for a higher grade potato within the two U. S. grade classifications indicated.

A third factor which may have a bearing on the wholesale price relationships in different markets, and within the same market in different years, is the relative quantities of potatoes from different states sold during this period. It is possible, for example, to have a higher level of demand for California potatoes than for potatoes from other states and at the same time to have the quantity of California potatoes sold on the market so large as to depress the price of California potatoes below the price of potatoes from other states.

As has been indicated, data on the quantities of potatoes sold at the different prices presented in table 6 are not available. However, data on May-June total unloads from each state for these two markets in the different years are available. Differences in total unloads

may be assumed to reflect at least roughly the differences in quantities of U. S. No. 1 and/or U. S. No. 1, size A grades sold. In the Chicago market between 1941 and 1942, when the wholesale price of California potatoes decreased relative to that of potatoes from other states, the May-June total carlot unloads of this state's potatoes in the Chicago market increased relative to the May-June total unloads of potatoes from other states. In the New York market, where California potatoes enjoyed a price advantage in each of the years included in table 6, the May-June total unloads of California potatoes was lower relative to unloads from other states than in the Chicago market for the same years.

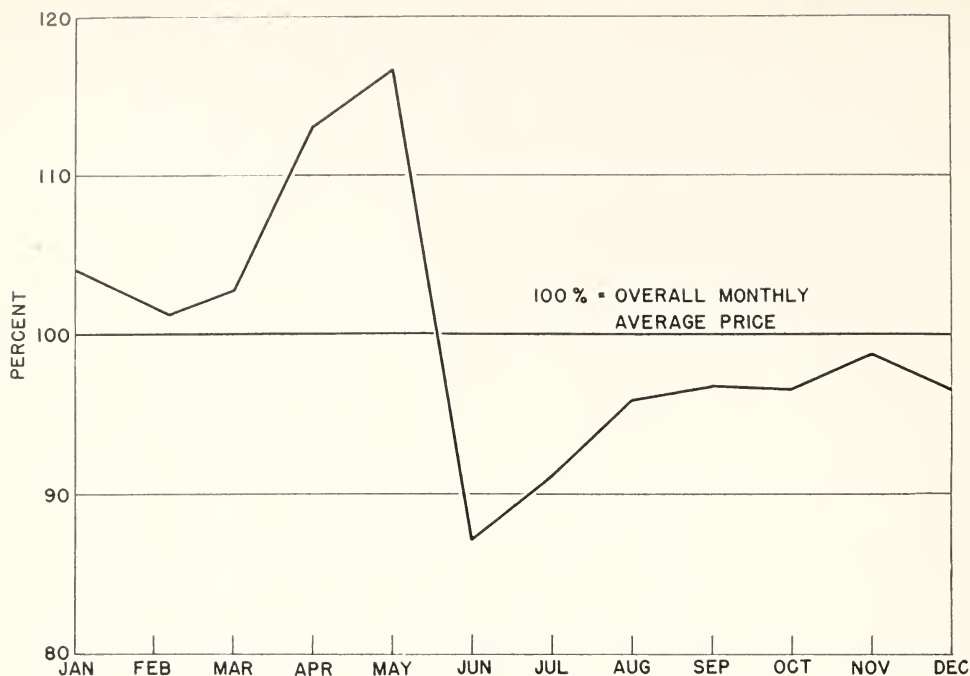
Whatever the explanation of the wholesale price relationship, it is evident from table 6 that California potatoes held no clear-cut price advantage over potatoes within the same grade classification from other states in an important market like Chicago in 1942, 1946, and 1947. This would suggest that the claim of such a price advantage for California long white potatoes should not be given undue weight in explaining the relatively favorable farm price of California potatoes which has existed historically.

Seasonal Variation

The seasonal variation in the California farm price of potatoes is given in figure 8. In this chart the average price for each month during the period 1919-1941 is expressed as a per cent of the overall monthly average price. The seasonal high in California farm prices for potatoes during this period was reached in May. The May price stood at just under 116 per cent of the overall monthly average. The seasonal low came in June with average prices falling at 87 per cent of the monthly average.

The California farm price has generally dropped sharply during June, the month of heaviest early potato marketings. Potatoes from the earliest producing

Fig. 8. SEASONAL VARIATION OF CALIFORNIA FARM PRICE



Based on unpublished data of the California Crop and Livestock Reporting Service, Sacramento

district (primarily the Edison district in Kern County) are marketed at or near the seasonal price peak. As a rule, potatoes in the Edison district are dug before maturity, yield being sacrificed to take advantage of the higher prices. In the later producing districts digging is generally delayed nearer to maturity, thereby increasing yield and potato size. Data available are inadequate to determine whether the increased yields resulting from delayed harvest are sufficient to offset the increased cost and seasonal decline in price, and thus result in higher profits to growers. It is reasonable to suppose, however, that growers' profit expectations are an important factor determining the timing of digging operations.

Consumption Trends

Consumption figures suggest that over the past thirty years a gradual shift away from potatoes has occurred in consumer taste. Figure 9 presents the trends in per

capita consumption of all Irish potatoes, early Irish potatoes, all fresh vegetables, and all canned vegetables. In each case consumption is expressed as a per cent of 1920. A declining trend in per capita consumption of all potatoes is evident as contrasted with an upward trend in the two categories fresh and canned vegetables. Although the shift in consumption away from potatoes has probably not all been into other fresh and canned vegetables, it is reasonable to suppose that these two other vegetable categories have constituted an important consumption substitute for potatoes.

Although per capita consumption of all potatoes has declined over the past thirty years, the trend in per capita consumption of early potatoes has been upward. These opposite trends reflect the extent to which early potatoes have displaced late crop storage potatoes on the market during the early potato marketing season. (These two series are not exactly

comparable since consumption by military personnel stationed within the continental limits of the United States is included for early potatoes but is not included for all potatoes. Still, the trends in the two series may be considered fairly

comparable, at least for years prior to World War II.)

Table 7 presents the per capita potato consumption during one week in the spring of 1942 in families classified by size of money income. The records on

Fig. 9. CHANGES IN PER CAPITA CONSUMPTION OF EARLY POTATOES, COMPARED WITH ALL POTATOES AND WITH FRESH AND CANNED VEGETABLES

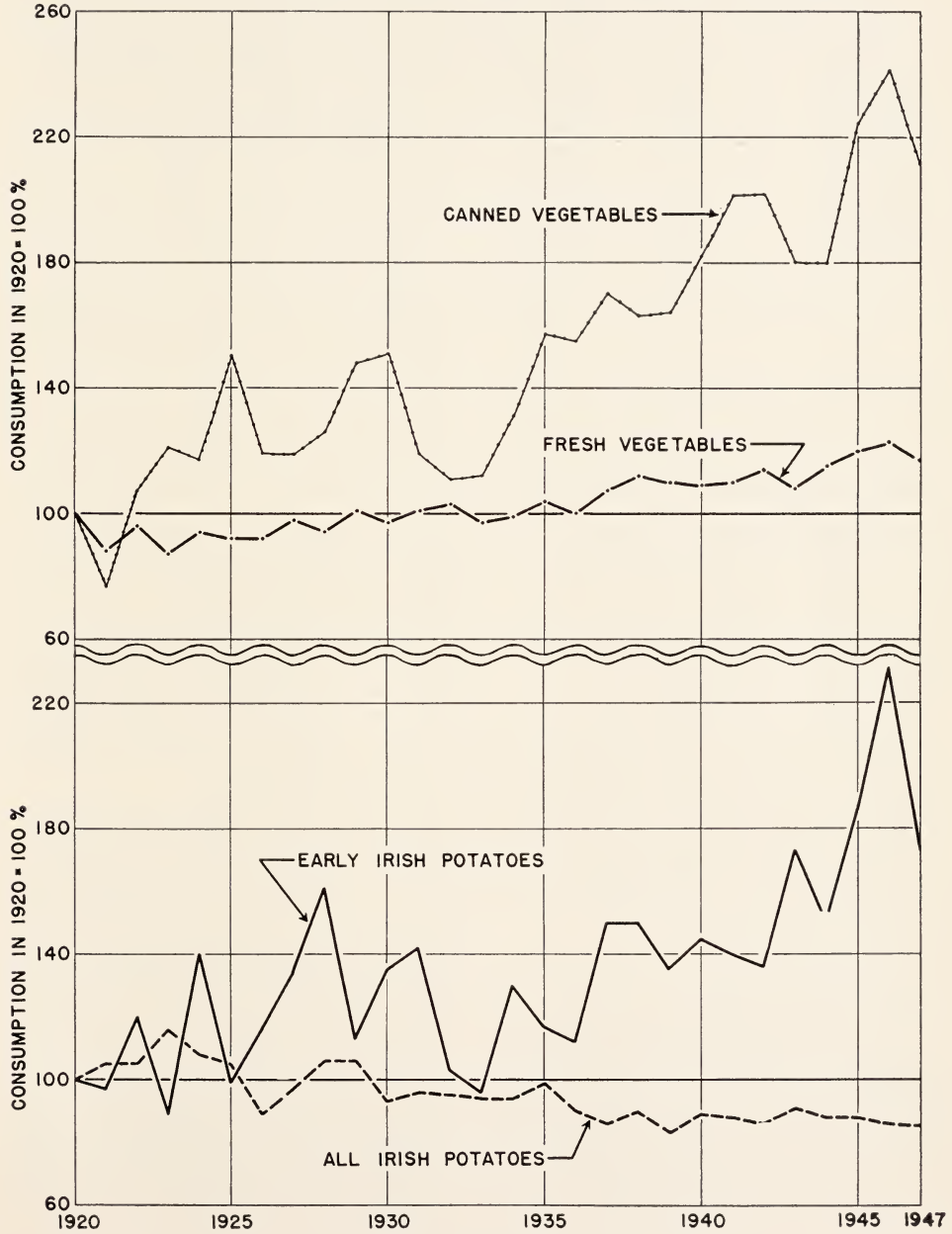


Table 7. POTATO CONSUMPTION PER PERSON IN URBAN FAMILIES CLASSIFIED BY SIZE OF MONEY INCOME
(Based on one week's consumption in the spring of 1942)

Money income class	Annual rate of income per person	Potato consumption per person
dollars		pounds
0- 499.....	175	2.72
500- 999.....	321	2.29
1,000-1,499.....	487	2.34
1,500-1,999.....	613	2.63
2,000-2,499.....	717	2.65
2,500-2,999.....	828	2.53
3,000-4,999.....	1,005	2.48
5,000-9,999.....	1,466	2.49

which these consumption figures are based do not all relate to the same week but do relate to a single week falling somewhere in the period from the middle of March to the last of June—a period in which a sizeable quantity of early potatoes is consumed. Data are presented only for the urban population since the purchases of this group account for a large proportion of the total purchases of potatoes in the retail markets.

The potato consumption per person was nearly the same in all income classes in the spring of 1942. This indicates that given the price of potatoes and the prices of substitute commodities which existed in the spring of 1942, the consumption of potatoes did not depend significantly on the size of money income.

Factors Affecting Price

The California farm price of early potatoes has exhibited wide year-to-year fluctuations over the past 25 years. These fluctuations appear to have been related to fluctuations in production in the opposite direction. California farm price and total production in late spring states

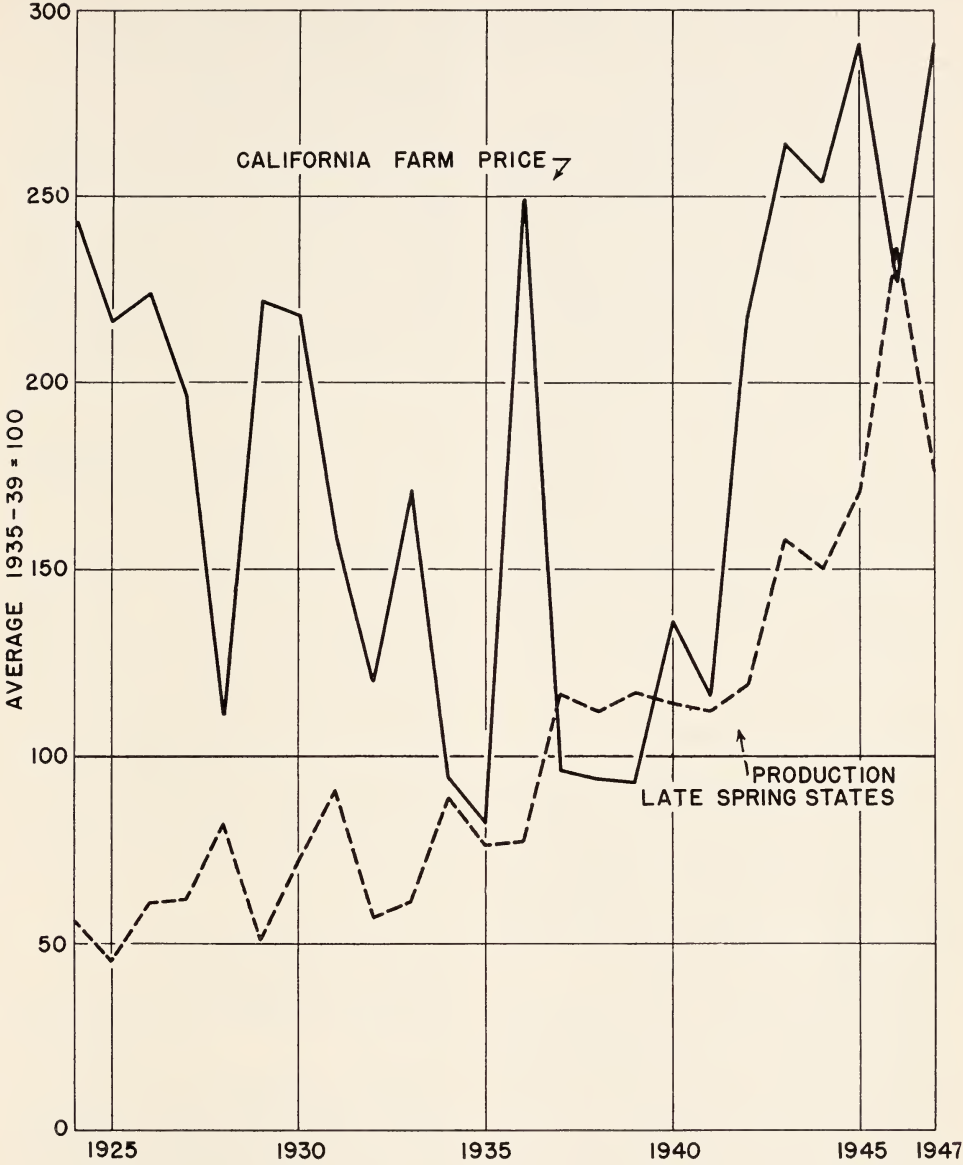
are presented in figure 10, each expressed as a per cent of its 1935-1939 average.

We would expect production in all late spring states to be most directly related to California farm price, since these states account for the bulk of the potatoes marketed during the California early potato marketing season. (As indicated earlier in this circular California production has constituted a significant proportion of the total production in late spring states since the middle 1930's.) Production of other early potatoes, and carry-over of late potatoes from the preceding year, would also be expected to affect California farm price to the extent that marketings of potatoes from these two categories lap over into the California early potato season. It is evident from a comparison of these two series that, except for the war years, marked changes in the season's average farm price of California potatoes have generally been associated with changes in total late spring production in the opposite direction.

It is also evident from figure 10 that the trend in both price and production turned sharply upward during the war years. This is in contrast with the apparent inverse relationship between price and production in both prewar and postwar years. A combination of several factors probably explains this positive production-price relationship.

During the war years national income increased sharply. Data presented in table 7 above suggest that per capita demand for potatoes is not directly dependent upon size of per capita incomes in a given time period when prices of substitute commodities remain unchanged. During the war years, however, the rate of population growth increased. This would be expected to increase the total demand for potatoes. It is possible also that persons in the armed forces during the war consumed more potatoes on the average than they did either prior to the

Fig. 10. CALIFORNIA FARM PRICE AND PRODUCTION IN LATE SPRING POTATOES



war or since. If true, this would tend to raise the demand for potatoes during these years.

The increasing demand for potatoes occurring along with the increase in level of income and increase in prices of substitute commodities has exerted an upward pressure on potato prices. (In this

connection it should be mentioned that price ceilings during the war years probably held the California farm potato price below what it would have been in the absence of price ceilings. Conversely, price supports, particularly in 1946, held the farm potato price above what it would have been otherwise.)

FARM PRICE SUPPORTS

What are price supports? How will new legislation affect potato prices? Here is a summary for the grower

What Are Price Supports?

Support prices for various agricultural products are simply price floors below which prices are not permitted to fall. Agricultural legislation does not specify support prices for particular commodities in absolute money values but rather in relation to parity prices for these commodities. Legislation governing potato support prices in 1948, for example, required that price floors be set at 90 per cent of the parity price for potatoes.

In order to make good the guaranteed minimum price, the United States Department of Agriculture is authorized to make loans and purchases and to otherwise divert excess supplies of a particular commodity away from regular market channels.

What Are Parity Prices?

Parity price for a particular commodity as now computed is that price which gives this commodity the same purchasing power, in terms of commodities which farmers buy, as it had in a designated base period. The base period for potatoes is August 1919–July 1929.

Beginning January 1, 1950 a new parity price formula will be used. Base period prices of various commodities will be adjusted to reflect the price relationships which existed in the 10-year period immediately preceding the year for which parity prices are being computed. Under this formula the parity price level will be such as to give agricultural products on the average the same purchasing power as they had in the base period, but parity prices for individual commodities may be above or below the level which will maintain its base-period purchasing power.

How the Formula Works:

The United States average price received by farmers for potatoes in the period August 1919–July 1929 (that is, the *base period price*) was \$1.12 per bushel. As of June 15, 1948 the prices which farmers paid for commodities which they typically buy stood at 166 per cent of prices paid in the base period 1919–1929. The United States parity price for potatoes as of June 15, 1948 was therefore: $(\$1.12) \times (1.66) = \1.86 . Adjustment in this general United States parity price is made for differences in grade, location, and other factors.

Under the revised parity price formula adjustments may be made in the base-period price. If the average potato price in the immediately preceding 10-year period, for example, is lower relative to prices of other farm products than it was in the base period, the base price will be adjusted downward. In this case, the revised parity price will be less than parity price as computed by the formula currently in use.

Commodity Categories

Basic commodities include corn, cotton, wheat, rice, tobacco, and peanuts for nuts.

Nonbasic commodities include all commodities other than basic. Among this group are 13 commodities (including Irish potatoes) for which the Secretary of Agriculture requested an expanded production for war purposes. These 13 commodities are sometimes referred to as the “Steagall” commodities because of the postwar price supports provided them, as distinct from other nonbasic commodities, under wartime legislation (the Steagall Amendment).

Summary of Current Support Legislation

The Steagall Amendment to the act of July 1, 1941 provided for price supports at 90 per cent of parity for all nonbasic commodities for which the Secretary of Agriculture requested an expansion in production for war purposes. The Irish potato is one of these commodities. These price supports were to remain in effect for 2 years from the first day of January following official declaration of the end of hostilities. This two-year period ends on December 31, 1948.

New Legislation Extends Price Supports

In June 1948 Congress passed new price-support legislation extending the general program of price supports beyond December 31 of this year. This new legislation provides for a more flexible system of price supports. The provisions applicable to Irish potatoes are as follows:

TITLE I (Effective January 1, 1949): The price of Irish potatoes harvested after December 31, 1948 is to be supported at not less than 60 per cent of parity and at not more than the 1948 support price. The Secretary of Agriculture will set the support price between these two extremes. The parity formula currently in use will be used in determining parity price.

TITLE II (effective January 1, 1950): The price of Irish potatoes harvested after December 31, 1949 will be supported within the range of 60 to 90 per cent of parity. The Secretary of Agriculture will set the price support within these limits. The *revised* parity formula will be used in determining parity price. (A transitional parity price is provided for commodities when their parity prices under the revised formula are less than their parity prices under the old formula. Roughly speaking, this

transitional parity price prevents the parity price of any particular commodity from falling by more than 5 per cent in any one year during the transition period.)

The new legislation also provides more flexible price supports for other agricultural commodities as opposed to the inflexible supports now in force. (This is true generally after January 1, 1950. Title I of the new act maintains price supports at 90 per cent of parity for basic and certain Steagall commodities through the 1949 season.)

Operation of the Potato Price Support Program

In every year beginning with 1943 loans, purchases, and diversion programs have been used to support potato prices at 90 per cent of parity. In the main, support-price operations have been directed toward the late potato crop, although purchases of early potatoes have been made in each year except 1943. Due to the perishable nature of the early potato, virtually all of the loan operations have been restricted to the late crop.

Information on the total quantity of early potatoes purchased or diverted in support of prices in each year is not available. However, in California, government purchases were first made in support of prices in 1944, when over one half million sacks were purchased for diversion from regular market channels. The heaviest support purchases in California were made in 1946 when nearly five million sacks were purchased.

In 1947, participation in the program was limited to growers who complied with individual farm acreage goals. The resulting decline in California potato acreage and production in 1947, along with the decline in production in directly competing areas, held California farm prices above support levels virtually throughout the 1947 season. Hence, government purchases amounted to only about 115 thousand sacks in that year.

Support purchases during the 1948 season promise to be substantially greater than in 1947, but still considerably under 1946. Up to June 15, 1948 the government had purchased around 407 thousand sacks of the Kern County potato crop. As of that date it was estimated that a total of around 1.2 million sacks would be purchased in Kern and Tulare counties in support of prices during 1948.

Uses Made of Government-Purchased Potatoes

Over 90 per cent of the heavy government purchases in California in 1946 went to manufacturers of alcohol for use in the making of rubber. The balance was taken by the manufacturers of potato flour and starch. Over two thirds of the much lighter purchases in 1947 were dehydrated for human consumption; the balance was dried for stock feed or donated to the school lunch program and public institutions. Of the total purchases through June 15, 1948, three fourths were being dried for livestock feed, the remainder going to human consumption either as fresh or dehydrated potatoes or in the form of potato flour.

These statistics on utilization indicate that all of the government purchases of California early potatoes through June 15, 1948 have been diverted into alternative uses, and outright destruction of even a portion of the surplus has not yet been necessary. With the heavier purchases anticipated this season, however, it is possible that a portion will have to be destroyed outright due to the lack of demand in alternative uses.

What Is Likely to Happen Under New Legislation?

If past experience can serve as a guide, considerable pressure is likely to develop in 1949 for effective potato price supports. On the other hand, if the intent of the bill is to be carried out in 1949, potato price supports will probably be set somewhere below 90 per cent of parity.

The heavy support purchases being required this year (1948) certainly indicate a surplus of potatoes at present price relationships. A reduction of support prices below 90 per cent of parity, unless accompanied by effective acreage restrictions, will probably mean that the potato price facing California potato growers in 1949 will be lower, relative to several other crops that can be produced on potato land, than it has been in 1948.

This does not necessarily mean that potato prices will be below the level of 1948. It is possible that the index of prices paid by farmers will continue to increase into 1949. If so, this will raise the level of parity prices for potatoes as well as for other agricultural commodities.

Beginning January 1, 1950 the revised parity formula is likely to result in a downward revision of parity prices for potatoes relative to those for other products. To illustrate what will happen under the new formula, the U. S. Bureau of Agricultural Economics has calculated a set of parity prices for selected commodities as of March 15, 1948 using the revised formula and using the 1938-47 adjusted prices as a base. In this example, the parity price of potatoes under the revised formula was 77 per cent of the parity price using the current formula. The parity prices of several other commodities were reduced but only a few were reduced as much as that of potatoes. (The parity price of cotton, for example, under the new formula was 87 per cent of that under the old formula.)

Potato prices are not likely to increase relative to other prices during 1948 and 1949. Hence, potatoes will likely be one of those commodities for which the transitional parity price will be necessary. In addition, the Secretary of Agriculture is permitted to adjust downward the percentage of the new parity at which potato prices will be supported. These factors point to a downward revision of potato support prices relative to prices of the bulk of other agricultural commodities.

PRODUCTION ALTERNATIVES

Growers should consider substitute crops in view of possible declining farm price. Land good for other crops

With the prospect of a downward adjustment in potato prices relative to other commodities, the question arises: is it likely to be more profitable to raise some other crop? This circular does not attempt to analyze the relative profitability of potatoes and various alternative crops. Information currently available is not adequate for such an analysis. Plans are being made, however, for some work of this nature in the near future.

As has been indicated the bulk of California's early potato production is centered in Kern County. It is of some interest, therefore, to look at what has happened historically in this county with respect to potatoes and certain alternative crops, even though an adequate explanation of the relative historical trends cannot be given at this time.

Figure 11 presents a picture of the total crop acreage, potato acreage, and acreage of selected alternative crops in Kern County since 1929. It is evident that the increase in potato acreage in this county over this period has not come from a decrease in acreages of the particular alternative crops shown. The upward trend in total crop acres has permitted all competing crop acreages to expand together.

Considering the period since 1937, the most significant period for the Kern County potato industry, potato acreage has expanded at a faster rate than the acreage of cotton, an important production alternative. Over this same period potato and alfalfa acreage have expanded at about the same rate. Although relative profitability does not entirely determine acreage shifts among alternative crops, these trend relationships do suggest that potatoes have maintained a relatively profitable position as compared with the alternatives. The sharp upturn in cotton acreage in recent years is probably ex-

plained as much by the desire of growers to build up a cotton acreage history, looking toward the expected future government cotton program, as by relative profitability.

Land development on a significant scale has taken place in Kern County since 1937, thus increasing the amount of land usable for the production of potatoes and other irrigated crops. Some undeveloped land still exists there. The initial costs of development, however, are heavy. With continued high price levels for agricultural products becoming more uncertain than in recent years, the rate of new land development is likely to decrease.

Crop Substitution

Further insight is gained into the substitution among potatoes and certain other crops from the information presented in table 8. The acreage data on which the figures presented are based were taken from the Kern County Agricultural Conservation Association records. The characteristics of the soil suitable for the growing of potatoes, cotton, alfalfa, and sugar beets are similar. All of these crops are grown under irrigation in Kern County. From a purely physical standpoint, therefore, these crops can be considered as substitutes in production. The category of "other cropland" includes all cropland other than that used for the four crops specified above.

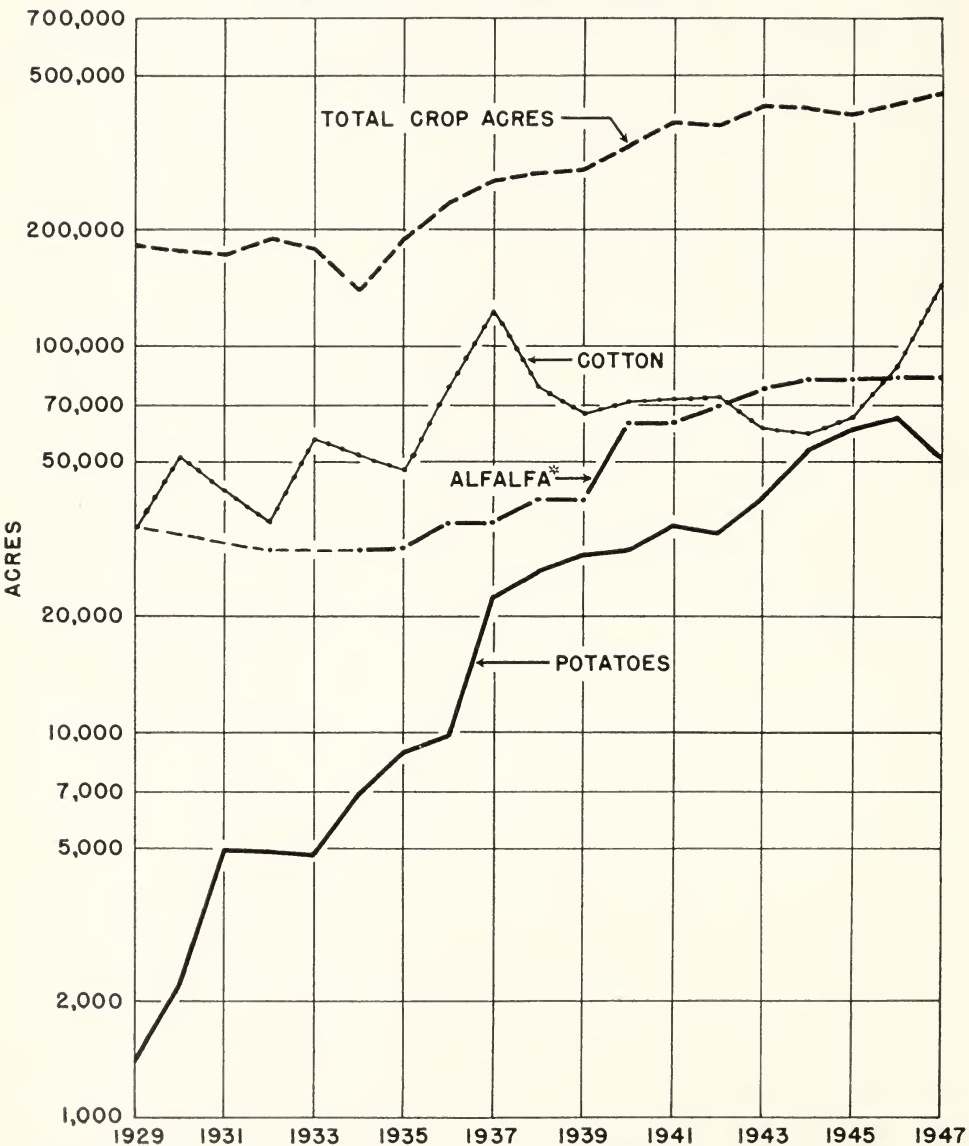
Table 8 is built on data showing acreage change of potatoes and other crops by farms for years between 1943 and 1947. The total positive change in potato acreage as between any two years is simply the sum of the increases in potato acreage on all farms which showed an increase. The increase in potato acreage on each farm was made possible either by a decrease in the acreage of cotton,

sugar beets, alfalfa, or "other crops," or by an increase in the acreage of total cropland. Decreases in potato acreage were made possible by changes in these other categories in the reversed direction.

The figures in table 8, therefore, show the proportions of the positive and negative changes in potato acreage in Kern County over the years indicated which are

accounted for by substitution of certain other crops and by changes in total crop acreage. Since the available records are incomplete, not all of the change in potato acreage can be accounted for. (The proportion of the total positive and negative changes which are accounted for is indicated in the first column for each pair of years.) The summary presented, there-

Fig. 11. CHANGES IN ACREAGE PLANTED TO POTATOES AND ALTERNATIVE CROPS, KERN COUNTY



Alfalfa acreage for 1930, 1931, and 1933 not available.

fore, should be considered as an approximation for the county as a whole; still, in the form presented, it probably does give for most of the years a fairly accurate picture of what has happened in the entire potato producing section of Kern County.

It is evident that for the period summarized the largest proportion of both positive and negative changes in potato acreage is accounted for by acreage changes in the opposite direction of crops falling in the category "other crops." The only pair of years for which this was not true was 1946-47 when 63 per cent of the negative change in potato acreage was accounted for by a positive change in cotton acreage. As has been indicated earlier in this circular, a sizeable net decrease in the potato acreage in Kern County took place between these two years. Data are not at hand which permit breaking these figures for "other crops" down into the various crops which fall in this category. The importance of

this category probably results from the substitutability of potatoes and a number of different crops of lesser importance. Among these are grain sorghums (primarily milo), tomatoes, other vegetables, and perhaps some irrigated small grains. With the possible exception of milo, probably no one of these taken by itself has been very important as a substitute for potatoes.

The most important single alternative to potato production on land suitable for potatoes has apparently been cotton. In percentage terms, however, cotton has more frequently followed potatoes in the rotation than the other way around (table 8). Of the other two crops specified, alfalfa and sugar beets have ranked in that order as production substitutes for potatoes.

Land Development

It is interesting to note the significant proportion of the positive changes in potato acreage which has been accounted

Table 8. CHANGE IN POTATO ACREAGE IN KERN COUNTY ACCOUNTED FOR BY THE SUBSTITUTION OF OTHER CROPS AND BY THE CHANGE IN TOTAL CROP ACREAGE

Years	Per cent of total potato acreage change accounted for	Per cent of potato acreage change accounted for by changes in acreage of:					
		Cotton	Alfalfa	Sugar beets	Other crops	Total cropland	Total
1943-44..... 1944-45..... 1945-46..... 1946-47..... 1943-44..... 1944-45..... 1945-46..... 1946-47.....	For increases in potato acreage						
	88	20	5	1	64	10	100
	83	21	9	1	54	15	100
	77	15	12	2	48	23	100
	65	32	6	2	50	10	100
	For decreases in potato acreage						
	49	32	10	a	58	a	100
	89	29	14	9	48	a	100
	76	32	14	18	35	1	100
	54	63	12	8	17	a	100

a Less than one half of 1 per cent.

for by positive changes in total cropland. This provides evidence of the rather extensive land development in Kern County referred to above. These figures, however, probably understate the full extent of this development. In some cases land previously used for nonirrigated crops was brought under irrigation and shifted to potatoes. The figures presented in table 8 include only previously uncropped land which was brought under irrigation and used in the production of potatoes.

As has been mentioned, information available is inadequate to permit an analysis of the reasons for the pattern of acreage shifts which has prevailed. Several factors have a bearing on the apparent substitutability or lack of substitutability. Important among them is probably the growers' expectations as regards the relative profitability of the various crops. Another factor is certainly the grower's planned program of maintaining the physical productivity of his soil through sound crop rotation practices. The higher overhead cost (for example heavier investment in machinery) of maintaining sufficient flexibility in the farm unit to permit shifting freely from one crop to another may be a factor mak-

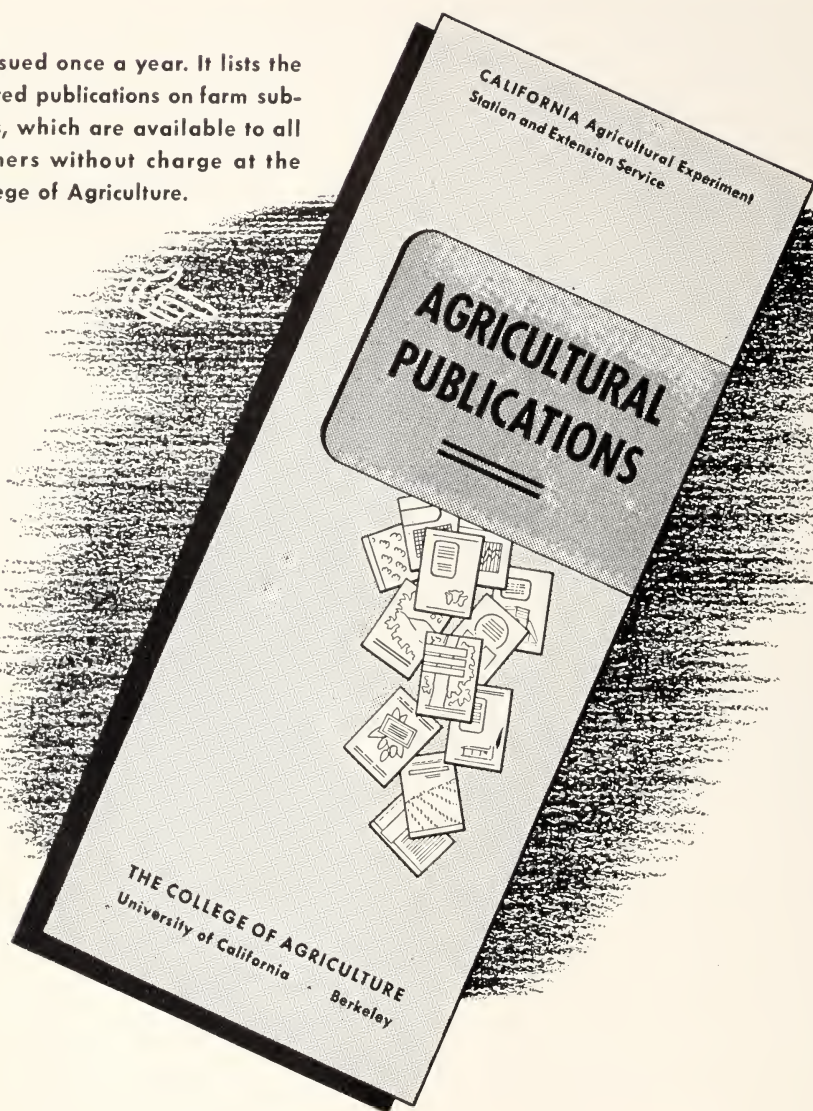
ing for lack of substitutability. In still other instances (of which sugar beets in Kern County may be one) there may be a reluctance on the part of growers to venture into the production of a commodity with which they have had little experience. (Sugar beets have become an important crop in Kern County only since the late 1930's.) Considering these factors, and others which have not been mentioned, we can feel quite certain that the explanation of the reasons for the grower's choice of what crops to plant from among his several alternatives is not simple. Neither is this explanation solely economic.

Whatever the explanation of production substitution in the past, it is recognized that substitution has been taking place and that the physical factors of climate and soil probably would permit considerably more of it in the California early potato producing area. In light of the prospect suggested above of a declining farm potato price relative to prices of a number of products which are possible alternatives in production, the grower would do well to weigh the alternatives carefully in planning his production program over the next several seasons.

The tables and figures appearing in this circular are summaries of more detailed tables, which are published in a separate Statistical Supplement in mimeographed form and which give sources in detail. This supplement may be obtained by writing to the Giannini Foundation of Agricultural Economics.

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